

WHAT IS CLAIMED IS:

1. A method of forming a device including emitters comprising:
exposing one end of a plurality of bundled together fiber segments to a reactive liquid to allow said reactive liquid to react with said ends of said fiber segments to form an array of bundled together tips;
depositing a conductive material on said array of tips;
depositing a dielectric layer on said coated array of tips;
forming a gate electrode on said dielectric layer; and
removing a portion of said dielectric layer to expose at least a portion of coated tips from the array of coated tips.
2. The method of Claim 1, wherein said reactive liquid comprises a bath of HF acid.
3. The method of Claim 1, wherein said reactive liquid comprises a spray of HF Acid.
4. The method of Claim 1, wherein said bundled together fiber segments comprise a sheet of fiber segments.
5. The method of Claim 1, wherein said conductive material comprises a low work function conductor taken from the group consisting of Mo, Ni, Cr, Cu, Au, Pt, Ir, Pd, Ti, Al, W, α -C and combinations thereof.
6. The method of Claim 1, wherein said tips each have a tip radius of less than 1 μm .
7. The method of Claim 1, further comprising:
providing a transparent substrate having a transparent conductive material deposited thereon;
forming a dielectric spacer on said transparent substrate;
etching selective areas of said dielectric spacer to form chambers for containing color phosphors; and

aligning said etched selective areas with said exposed coated tips to form a tip cell array structure.

8. The method of Claim 7, wherein the transparent conductive material comprises a patterned transparent conductive material.

9. The method of Claim 7, further comprising:
sealing said tip cell array structure after pumping said tip cell structure into vacuum.

10. A field emission device comprising:
a cathode plate formed by:
 exposing one end of a plurality of bundled together fiber segments to a reactive liquid to allow said reactive liquid to react with said ends of said fiber segments to form an array of bundled together tips;
 depositing a conductive material on said array of tips;
 depositing a dielectric layer on said coated array of tips;
 forming a gate electrode on said dielectric layer; and
 removing a portion of said dielectric layer to expose at least a portion of said coated tips from said array of coated tips; and
an anode plate formed by:
 providing a transparent substrate having a transparent conductive material deposited thereon;
 forming a dielectric spacer on said transparent substrate; and
 etching selective areas of said dielectric spacer to form chambers for containing color phosphors;
said anode plate and said cathode plate formed together to align said etched selective areas with said exposed coated tips to form a tip cell array structure.

11. The field emission device of Claim 10, wherein said tip cell array structure comprises a seal to allow said tip cell array structure to be pumped into vacuum.

12. The field emission device of Claim 10, wherein said reactive liquid comprises a bath of HF acid.

13. The field emission device of Claim 10, wherein said reactive liquid comprises a spray of HF Acid.
14. The field emission device of Claim 10, wherein said bundled together fiber segments comprise a sheet of fiber segments.
15. The field emission device of Claim 10, wherein said conductive material comprises a low work function conductor taken from the group consisting of Mo, Ni, Cr, Cu, Au, Pt, Ir, Pd, Ti, Al, W, α -C and combinations thereof.
16. The field emission device of Claim 10, wherein said tips each have a tip radius of less than 1 μ m.
17. The field emission device of Claim 10, wherein the transparent conductive material comprises a patterned transparent conductive material.
18. A method of forming a device including emitters comprising:
 - providing a sheet of fiber segments, each fiber segment having a first end;
 - exposing said first ends of said fiber segments to a reactive liquid to allow said reactive liquid to react with said first ends to form a tip at each first end;
 - depositing a conductive material on said tips;
 - depositing a dielectric layer on said coated tips;
 - forming a gate electrode on said dielectric layer; and
 - removing a portion of said dielectric layer to expose at least a portion of coated tips;
 - providing an anode plate including chambers containing color phosphors; and
 - aligning said chambers with said exposed coated tips to form emitter cells.
19. The method of Claim 18, wherein said reactive liquid comprises a bath of HF acid.
20. The method of Claim 18, wherein said reactive liquid comprises a spray of HF Acid.

21. The method of Claim 18, wherein said conductive material comprises a low work function conductor taken from the group consisting of Mo, Ni, Cr, Cu, Au, Pt, Ir, Pd, Ti, Al, W, α -C and combinations thereof.

22. The method of Claim 18, wherein said tips each have a tip radius of less than $1\mu\text{m}$.